VOLUME XXIII NUMBER 7 WHOLE NUMBER 186

THE JOURNAL
OF
THE ROYAL ASTRONOMICAL SOCIETY OF CANADA

DEVOTED TO THE ADVANCEMENT OF ASTRONOMY AND ALLIED SCIENCES

EDITOR
C. A. CHANT
University of Toronto, Toronto

ASSOCIATE EDITORS
J. S. PLASKETT
Director of the Dominion Astrophysical Observatory, Victoria, B.C.

J. PATTERSON
Director of the Meteorological Service of Canada, Toronto

R. MELDRUM STEWART
Director of the Dominion Observatory, Ottawa

PUBLISHED MONTHLY
(*Ten numbers per year*)

September, 1929

PRINTED FOR THE SOCIETY
TORONTO: 198 COLLEGE ST.
FOREIGN AGENTS: WHELDON & WESLEY LTD.
2-4 ARTHUR STREET, NEW OXFORD STREET, LONDON, W.C

THE JOURNAL

OF

THE ROYAL ASTRONOMICAL SOCIETY OF CANADA

VOL. XXIII, No. 7 SEPTEMBER, 1929 WHOLE No. 186

Articles PAGE

The Astrophotographic Station of La Haute Provence *Emile Touchet* 295

Stellar Influences - - - - - - - *Kilbee Gordon* 302

Review of Publications

Astronomische Chronologie (Neugebauer) Atlas de l'Hemisphère céleste boréal *Part II* (Prague) - - *C. A. C.* 338

Notes and Queries

Rotation Period of Neptune—Death of W. R. Warner—Withdrawal of Sir Frederic Stupart - - - - *C. A. C.* 339

Meetings of the Society

At Toronto—At Victoria - - - - - - - - - 341

Upon request, made previous to publication of article, contributors will be supplied free either with fifty copies of the issue containing the article, or with the sheets containing the article attached to a printed cover. If seperate reprints are desired the cost will be as follows :

	4 pp.	8 pp.	12 pp.	16 pp.	20 pp.	24 pp.
50 copies	$3 50	$5 50	$ 9 50	$10 00	$13 00	$10 00
100 copies	4 00	7 00	10 00	11 00	14 00	18 00
200 copies	4 50	8 00	11 00	12 00	15 50	20 00

Covers, extra, 50 copies, $1.50; 100 copies, $2.00; 200 copies, $2.50.

Business correspondence, remittances, etc., should be addressed to H. W. Barker, Treasurer of the Society, 198 College Street, Toronto.

Communications regarding Library matters should be addressed to the Librarian.

$2.00 per annum. Single numbers, 25 cents.

Subscription to the JOURNAL is included in membership fee.

FOR SALE—The observatory of the late William Bruce. Easily removable in parts. Very reasonable price. Apply to John Walkden, 101 Brucedale Ave. East, Upper Hamilton, Ont.

PLATE XVIII.

(North)

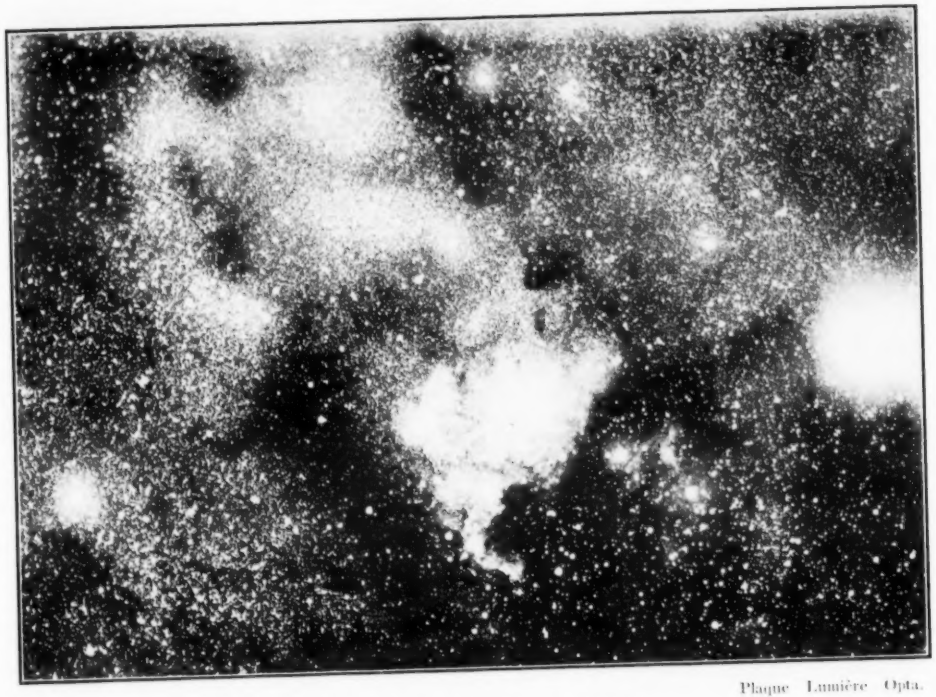
Plaque Lumière Opta.

THE CLUSTERS IN PERSEUS

1° = 17.6 mm. Negative by M. de Kerolyr, Digne, Basses-Alpes, France.

PLATE XIX.

(North)



Plaque Lumière Opta.

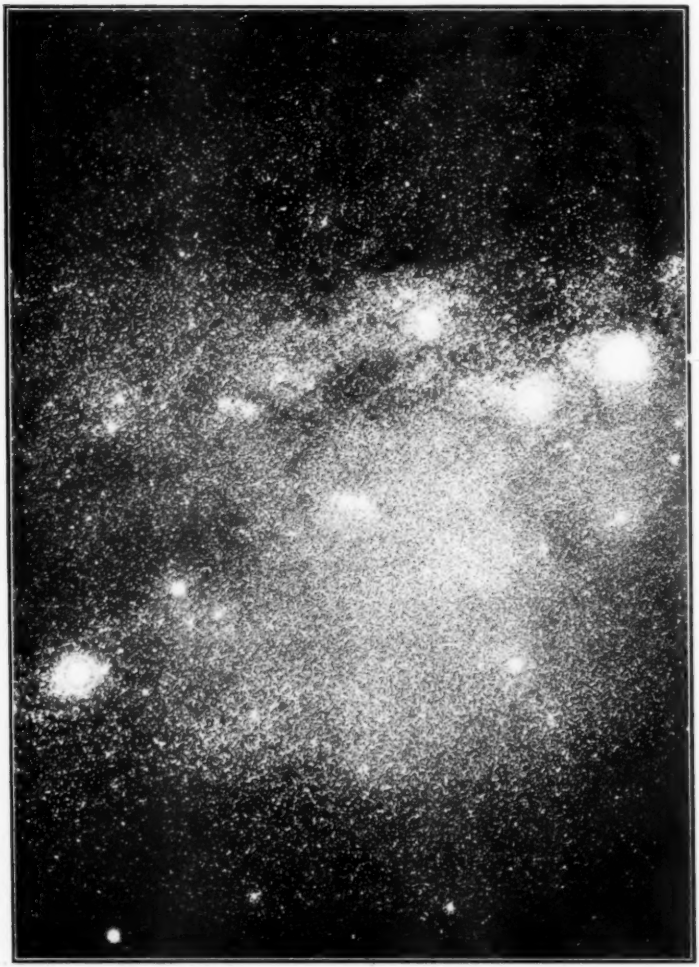
THE NORTH AMERICA NEBULA

1° = 17.6 mm. Negative by M. de Kerolyr, Digne, Basses-Alpes, France.

Journal of the Royal Astronomical Society of Canada 1929.

PLATE XX.

(North)



Plaque Lumière Opta.

THE MILKY WAY IN THE CONSTELLATION PERSEUS

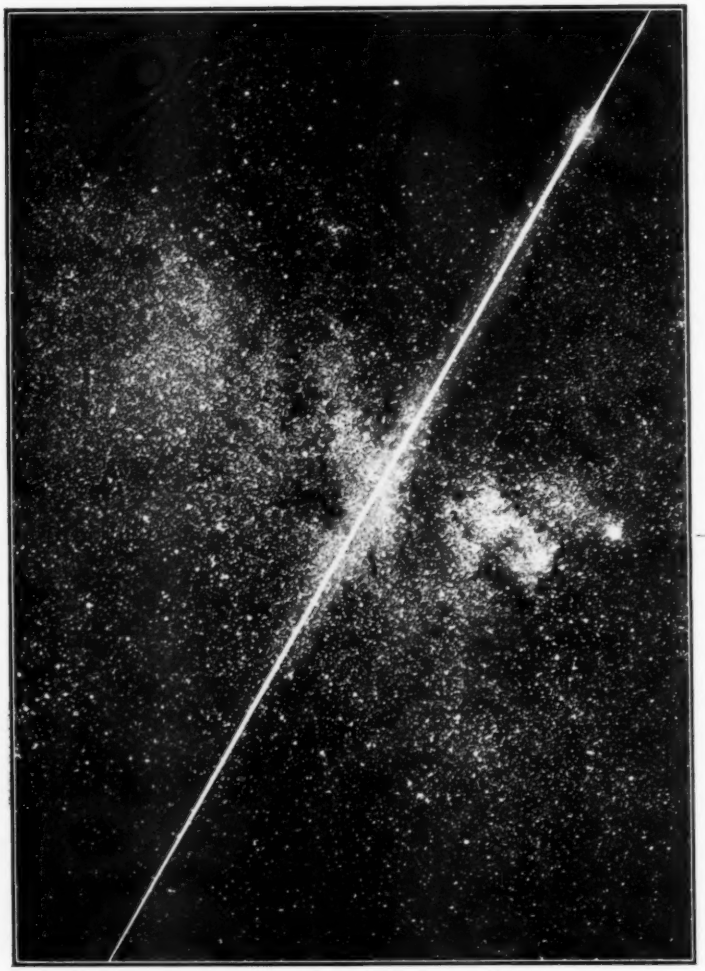
(At the centre, the Clusters in Perseus; at the right edge, 2 inches from the top, Alpha Persei.)

1° = 3.96 mm. Negative by M. de Kerolyr, Digne, Basses-Alpes, France.

Journal of the Royal Astronomical Society of Canada, 1929.

PLATE XXI.

(North)



Plaque Lumière Opta.

PASSAGE OF A BOLIDE

through the Constellation of Cygnus, August 13, 1928, 8.50 p.m. (The star 3 inches from bottom, ½ inch from right edge is Alpha Cygni.)

1° = 3.96 mm. Negative by M. de Kerolyr, Digne, Basses-Alpes, France.

Journal of the Royal Astronomical Society of Canada, 1929.

THE JOURNAL
OF
THE ROYAL ASTRONOMICAL SOCIETY
OF CANADA

VOL. XXIII, No. 7 SEPTEMBER, 1929 Whole No. 186

THE ASTROPHOTOGRAPHIC STATION OF LA HAUTE PROVENCE[1]

By EM. TOUCHET

We record with pleasure the foundation, near Digne (Basses-Alpes) of a novel observatory devoted most particularly to astronomical photography. The new astrophotographic station originates from the patient researches undertaken some years ago by MM. A. Conder, A. Danjon and J. Dufay to locate the regions in France most favourable for astronomical observations. These researches were noticed in the *Bulletin* several months ago.[2]

It was, in effect, following the publication of this work that our devoted colleague M. de Kerolyr decided to remove to the vicinity of Digne the little astronomical installation which he had been using at Nice, so as to devote it to celestial photography for which he manifests the most lively interest.

The sky of the Côte d'Azur is greatly praised; everything depends on the observer's location. But when we take into account the marine fog, the dust raised by automobiles and the glare projected by their powerful headlights, the glare also of the electric illumination, the smoke and vapours, and the altitude (sea level), we see that M. de Kerolyr had good reason to fix upon the elevated region of Digne with its great advantages, the purity of the air being such as to merit the appellation of "the French California"

[1] Translated from *L'Astronomie* with the author's permission. The photographs are from prints supplied by M. de Kerolyr.—Editor.

[2] *L'Astronomie*, t. 41, September 1927, p. 428 to 430.

accorded by those who have recognized the value of its sky for astronomical observations.

The position of M. de Kerolyr's observatory is:

Latitude: 44° 5′ 20″
Longitude: 3° 52′ 45″ East.
Altitude: 640 metres.

Fig. 1. Astrophotographic Station of M. de Kerolyr, at Digne, Basses-Alpes, France.

The observatory shelter is composed, as shown in the accompanying illustrations, of a sort of cabin built of corrugated sheet-iron, the roof of which, of the same material, is mounted on wheels. To uncover the instrument this roof is rolled backward on the wooden frame shown in figure 1.

With such an installation the instruments quickly take on the temperature of the air; but on clear nights, naturally very often cold at this altitude, the observer freezes. He needs that sacred fire known to all those who have the passion of the heavens, to

resist the cold and to produce the marvellous photographs of which we shall speak presently.

Figure 2 shows the observatory shelter open. The roof has been pushed backward. Through the door we see the instruments. This was almost entirely constructed by M. de Kerolyr himself. The equatorial mounting is composed of an hour-axis constructed from suitable parts of the frame of a Harley-Davidson motor-cycle, with ball-bearings, and of a steel bar of 25 millimetres

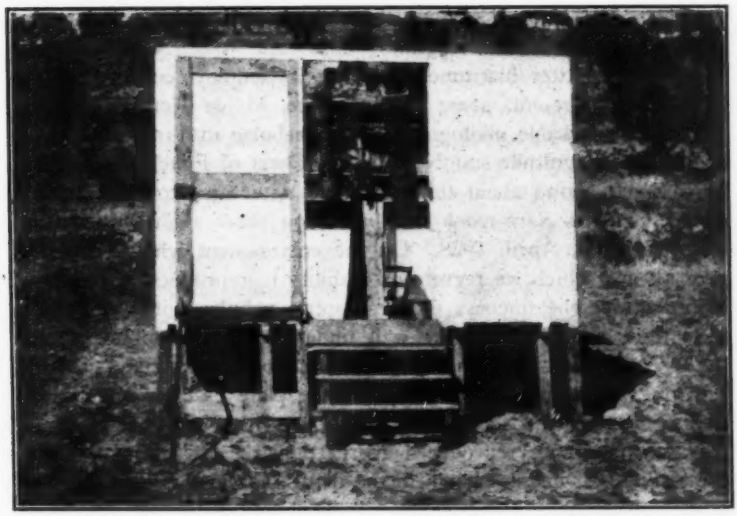


Fig. 2. View of Telescope when the Roof is pushed back and the Door is open.

diameter. The driving plate with 60 teeth and the endless screw are the only parts constructed by a mechanic.

The whole is fixed on the trunk of an olive-tree cut to the proper angle, by which the construction of a pillar in masonry has been avoided. We have noticed previously the utilization of the trunk of a tree as an equatorial pillar by M. B. Lyot in his recent description which appeared in the *Bulletin*.[3]

[3] *L'Astronomie*, t. 42, September 1928, p. 417.

The rotation movement of the screw and the reducing gears (ratio 84,000 to 1) have been borrowed from pieces of a toy "Meccano". Thus, for the forward motion it suffices to make one turn per second approximately.

The mounting supports several instruments as may be seen in figure 2. On the left is placed the guiding telescope of 90 cm. focal length. Behind is a Derogy portrait-objective of 13 cm. aperture (generally diaphragmed to 12 cm.) and of 60 cm. focal length. With this objective have been taken the photographs shown in Plates XVIII to XXI. At the right is a Berthiot aviation objective of 120 cm. focal length.

With this latter instrument, though its employment in celestial photography presents some inconvenience, M. de Kerolyr has obtained a remarkable photograph of the nebulae in Virgo surrounding the 5th magnitude star No. 6 of the Chart of Fouché and Flammarion. It shows about thirty nebulae, after an exposure *of five hours, without clock-work movement,* on three nights, the 10th, 12th and 13th, April, 1928. On the enlargement which has been sent us, and which we regret our inability to reproduce, it is astonishing to see the fineness of these spiral nebulae with their very numerous details. We very well understand the emotion of the author of the plate when after development he examined it with a strong magnifier. The surface of the plate exhibits a veritable genesis of suns and shows stars probably to the 14th magnitude.

The photographs reproduced are particularly interesting through the richness of details shown in the plates, all taken without clock-work movement.

Such perseverance, such patience, have received their recompense in the marvellous image revealed by Plate XXI, when, on August 13 last, about $8^h\ 50^m$ (T.U.A.) M. de Kerolyr was photographing the Milky Way in the region to the left of the bright star Deneb (α Cygni) an *enormous* bolide flashed across the field of his instrument. The nucleus was of a dazzling green-blue colour, followed by a thin train of gold-yellow. The observer, always obliged to guide his instrument, in default of a driving clock, was unable to note the point of apparition. The point of disappearance seemed to him a little outside the bottom of the plate, toward Beta Pegasi.

The observer estimated as two seconds the period between the bright outburst of the bolide and its disappearance.

Examination of the plate permits some calculations. The total exposure of the plate having been two hours, and the time occupied by the meteor being estimated at one second to pass from one extremity to the other, that is then 7,200 times less than the the total exposure. The brightest star (toward the right of the middle of the plate) is Deneb, magnitude 1.33. The enormous bolide having left on the plate a train almost as large as the image of Deneb, although with a strong halo, it may be admitted that its brightness was in the neighbourhood of 5,000 times that of a star of the 1st magnitude; therefore of magnitude – 9.

If we consider only a part of the trajectory equal to its breadth, as if the bolide had been photographed instantaneously in a fifteenth of a second, and compare this with the image of Deneb, we find—always with a very large margin of error—that the bolide was 75,000 times more brilliant than a star of the 1st magnitude, that is to say, of magnitude – 12.

This magnificent bolide must certainly have been seen by a great number of persons. If, as is probable, good observations exist, by comparing these with the exact details revealed by M. de Kerolyr's photograph the elements of the meteor could be computed with good precision. We may add, so far as concerns the photograph of the bolide, that the coördinates of the centre of the plate are:

Right Ascension, 21h 35m; Declination, + 48°.

The beautiful systematic work undertaken by our colleague, M. de Kerolyr, suggests some reflections. Astronomical photography, more exactly stellar photography, (stars, clusters, nebulae), has not been developed in France as it has been in certain foreign lands. It suffices to recall here the work of Isaac Roberts in England, of Max Wolf in Germany, of Palisa in Austria, and above all those of Keeler, of Perrine, of E. E. Barnard, of Hubble, of J. C. Duncan and of G. W. Ritchey in the United States, to recognize the small amount of material that our country can oppose to those collected by these eminent astronomers. However, we ought

to remember that the Henry Brothers were the promoters of the first photographic Chart of the Heavens, and that, thanks to their researches, this grand work has had such important results. But outside of the isolated efforts, for the most part not persevering, enumerated in the pages of the *Bulletin*, we know of but two amateurs in France who truly have pushed very far the applications of astronomical photography: M. F. Quénisset of the Observatory of Juvisy, whose ability is well known, and M. Lucien Rudaux, who has obtained splendid photographs of the Milky Way at his observatory at Donville, photographs warmly applauded on their presentation at one of our recent meetings. M. Lucien Rudaux, like M. de Kerolyr, has taken all his photographs following by hand without a driving clock.

And now we arrive at a conclusion of this brief explanation, which the modesty of our colleague, M. de Kerolyr, should permit.

Here is an able observer who did not hesitate to leave the beautiful region of the Côte d'Azur,—where so many return to settle—to come and construct a modest astrophotographic station on a mountain in a region offering much less convenience, but the atmosphere of which is often of a marvellous transparency. He is meeting with admirable success, as is proved by the results reproduced here, in spite of the mediocrity of the means for his work. The plates are veritably after the style of Barnard. We have had the curiosity to compare some of these photographs with those recently published by the Yerkes Observatory in the marvellous collection entitled *A Photographic Atlas of the Milky Way*, containing the splendid photographs of Edward Emerson Barnard, made with the Bruce Telescope, the objectives of which are of 25 cm. and 16 cm. aperture. We have reached the personal conclusion that with an instrument more powerful than those now at his disposal, our colleague of Digne would obtain results of the greatest interest for astronomy.

The Société Astronomique de France, which has for its object to "facilitate the ways and means of all those who desire to undertake astronomical studies", through which co-operative aid has so often and so happily been arranged, will certainly see with lively

pleasure the development of this astrophotographic station of La Haute Provence for the greatest interest of French science. What is necessary for that? In the Society there are amateurs who have at their disposal equatorial mountings not in use, others who have powerful anastigmatics of large aperture at present unutilized, other friends of ours, constructors of instruments of precision, if they would search carefully would certainly find some old clockwork movement, which would obviate the need for these long exposures of four or five hours solely by hand motion with the eye riveted to the ocular!

The assemblage of these accessories would permit a great development of the existing station and with the same amount of labour the obtaining of results of much greater value, because of the superior definition. We know some scientists are interesting themselves in the new Station de la Haute-Provence. It is our duty to make known the promising results which it has already secured.

STELLAR INFLUENCES*

By KILBEE GORDON

"Come, with me, out into the open and under the stars."

LOVE TRAVELS

Come! raise your eyes to the stars, tonight!
  And we'll gaze on the wonders, there!
Those outer rooms, with great Love, are bright;
  And the dwellers are wondrous fair!

All far away are those orbs of White,
  So infinitely far—sublime!
The souls there breathing Eternal Light,
  In their golden, glorious clime!

They never shall worry about things past,
  They know that their future is sure;
That their present state shall all time last
  And their joys forever endure!

It's a long way to those Halls of Light,
  Where the beings are all so fair;
But, raise your eyes to the stars, tonight,
  And, with Love, you and I—are there!

KILBEE GORDON.

The minds of human beings are composed of two parts: that which is cognizant of our so-called material surroundings, and that which gropes after the less apparent, our immaterial environment.

We are living in a world of appearances; a world, which is but a very infinitesimal speck in an UNIVERSE OF APPEARANCES; and, paradoxical as it may sound, we find all the most beautiful things that we speak of, think of, and aspire to, are those very things we have never seen with these eyes of ours. It is only

*Read before the Victoria Centre of the R.A.S.C., April 9, 1929.

when we open wide the windows of the soul, that we can perceive THOUGHT, COURAGE, PATIENCE, FAITH and, greatest of all, LOVE!

SOUL-WINDOWS

My son! 'tis futile old mistakes to rue!
  This counsel heed! If you would win life's prize,
  Keep open windows in your heart—be wise!
See all the good and golden things and true!
For, dirty window-panes obscure the view
  And hide all sunny scenes from tear-stained eyes,
  That, burning, long to see the radiant skies;
The starry, moonlight nights are hidden, too!

Let in the sunshine of the smiles that grow
  About you, and your own will earn you friends!
Then fairer scenes and friendships you will know;
  And, as you journey to The Highway's ends,
You'll learn to love, forbear and to forgive!
Clean up the windows of your soul—and live!

KILBEE GORDON IN *Chambers's Journal.*

Neither have we ever yet SEEN the heavenly bodies—the stars! But, as I hope to show you, we are most greatly and gratefully influenced by the light that emanates from those "Orbs of Light", when we gaze on the Night-sky and peer into the dark, which that most lovable poet and prose writer, George Macdonald, so beautifully describes: "The dark is only the box He keeps His bright things in!"

We are the prospectors of our little day, with the great Universe itself for our field of action; and our true and hidden treasure-trove is not the gold, or jewels, or this world's hidden gems, but rather the realization and adoption of those very attributes, which I listed a moment ago, and, in the storehouse of our deepest memories, to guide us in our search, are there not some few lines, of poem or of prose, and which, like a still, small voice, crop up and whisper in our inner ear, to warn of danger, or to guide us to our ultimate success—which is Happiness, and those lines, "Pursue us

down the arches of the years", to lead us to the final discovery of the great Treasure-trove, that awaits all earnest searchers after TRUTH. For, only with the eye of the mind, the telescope of the heart and the faith of the soul, have we seen anything of these things we most admire and look up to—LOVE, COURAGE, HOPE AND THE DIVINE!

Firmly believing that LOVE is the most beautiful, as it is the only permanent, real thing in this ever-changing sphere of action that we call LIFE; the only stability in this vast and wonderful UNIVERSE OF APPEARANCES that has its humble place amongst the myriad companion Universes, which, like ourselves, are travelling through the countless kilo-parsecs of space to that unknown destination, VEGA, I have taken "STELLAR INFLUENCES", as the title of this, my humble paper, which I am grateful to have the privilege of reading to you; and I would ask your kind indulgences if it is somewhat lengthy; but, it is such a vast subject, and I may only touch upon a few of the certain aspects that have long interested me, who would try to bring the stars nearer to you, and perhaps, help you to reach out to them, by showing you the wonderful and kindly influence they have always exerted upon mankind and his best thoughts and aspirations, ever since men have become sufficiently evolved, from their erstwhile barbaric state, to know enough to stand upright on their legs, like a Man, and sufficiently wise to look about them and reflect, by day, and sufficiently curious and studious to look up to the stars at night, and sufficiently observant to feel the benign influences of the celestial bodies; to wonder at them, to admire them, to adore them and worship them as gods, and why not? for, only Love and good influences have we experienced and received from those God-set points of Light, through all the ages; and we are still wondering: "What they are, that shine like diamonds in the sky!"

Those bright luminaries have ever coloured our thoughts, illuminated our language and influenced our imaginations with their celestial light.

NIGHT'S TRYSTING-PLACE

Our happy mem'ries much outweigh the sad;
They compensate us, when old age draws nigh
And we can smile at what once caused a sigh;
Recalling all the privileges we had
Of meeting friends, in days that were all glad,
When we were younger and the morning sky
Was sunful—bright with hope to beautify
Our way of Life, up hills in verdure clad!

As we grew older, and of friends but few
Remained, to clasp our hands and share our joys,
Our vision dimmed; the twilight came apace;
Our former pleasures palled; and fainter grew
The sunsets; but, the stars procure us poise!
We tune our heartstrings at Night's trysting-place!

KILBEE GORDON.

The word "Stellar" explains itself, especially when used in speaking to the members of the Victoria Centre of the Royal Astronomical Society, who are so often privileged to hear the wonderful lectures on the stars and their positions and motions, from those who are in charge of the great observatory here, men who spend their whole lives in contemplation and deep study of the heavens.

However, the following few remarks may not be out of place: A star is an apparently small luminous body in the heavens, that shines at night, or when its light is not obscured by clouds or lost in the brighter effulgence of the sun. Stars are "fixed" or "planetary". Fixed stars are known by their twinkling and by always being in the same position in relation to each other. Planets, or wandering stars, do not twinkle, and they revolve, as do we, about the sun.

The fixed stars are considered by astronomers to be suns, and their immense numbers exhibit the astounding extent of what we term CREATION, and of the Divine Power.

David, who was one of the greatest of all poets, in his truly immortal poem, the 19th Psalm, says:

"The Heavens declare the glory of God and the firmament showeth His handy-work!"

Nothing more beautiful has ever been penned; the great influence of the stars was known and felt in those far away days of Royal David; and the stars inspired the Psalms and many other glorious songs of the Hebrews, a nation of poets, and the 19th Psalm has been an inspiration to the world ever since it was first sung and written, and it is today not without its charming and heaven-born influence on a tired world.

The very word "Star", in every country and in every tongue, is a synonym for all that which is highest, noblest and most truly uplifting. Bulwer-Lytton says: "Aim at the highest and, at least, you soar", and, again, in another poem, "Hitch your wagon to a star"!

We say he, or she, is a star-performer, star-musician or artist; and, by that, we mean that they are specially superior persons of brilliant and attractive qualities.

We thank our "lucky stars", when all goes right with us, and it is only right that we should do so. Let me repeat: "Aim at the highest and, at least, we soar!"

In the Scriptures, Christ is called the "Bright and morning star", that is, the star that ushers in he light of an eternal day to His people.

In every land, the highest and most coveted "orders" are in the form of a star, as are most badges of rank and distinction.

The star of Bethlehem—I need not emphasize the great influence on the life and conduct of the world that this star has had on mankind. What would our lives and our civilization be without that star? The Star of the Messiah!

That any strange sidereal phenomenon should be interpreted as a signal of a coming King was in strict accordance with the beliefs of that age. In the eastern sky there hung a star of unusual brilliance. To some, in the tremblings of their guilty superstitious minds, it seemed to tell of some terrific disaster; to others, of nobler and wiser thought, it heralded an era of great peace and plenty, and we know now which of all those watchers of the night was right. To

the Magi, that magnificent gem in God's treasure-box betokened the coming of a great Prince, who came indeed and brought us tidings of great joy.

All of us have been attracted, at some time or other in our lives, by some one particular star, or group of stars, unconsciously or deliberately. For myself, the greatest feeling of friendship I have ever experienced comes from the Pleiades. I don't know why, but I have always loved them; and I have always loved the sea and boats that sail the seven seas, as do the seven major members of the great cluster of stars, situated in the neck of Taurus, sail majestically the sidereal seas of TIME and SPACE and LOVE; and I believe that "In the heart, as in the ocean, great tides ebb and flow!" (Bulwer-Lytton.)

The Latin name for the Pleiades was *Vergilliae,* from *ver,* spring, because of their rising about the vernal equinox. The Pleiades are the nautical guides, and spring is the period of youthful hopes; and I am not sorry that I have a distinct feeling that one Pleiad in particular, of the several hundred luminaries that comprise the group, (some persons can see only six with the naked eye) is my own particular stellar guardian; and I hope that it is so. I almost feel sure that it is so! However, to quote Voltaire, "There are truths, which are not for all men, nor for all times".

But "Influences", why Influences? What possible influence can we, here in this our little spheroid, feel from the stars, some of which are so far away that it is not possible to the mere lay mind to approach to an equitable understanding of the vast distances involved. I will try to tell you of some of these most wonderful influences.

Now, the great Sun, the life-giver, has, we all know, a most direct and physical influence on this little world, and I do not need to explain that to any of you; it is our very life; also, the moon has a very direct influence, although a minor one, on our physical life here; and I need only to mention the tides, to remind you of but one of the very necessary influences of her majesty, the Moon, and, as I may not again this evening have time to refer to the Moon, I shall read to you, now, two of thousands of lovely references to

the Moon which I have read and love, and I shall then pass on to the stars and their influences once more.

The first is from the pen of my beloved and favourite author, Bulwer Lytton.

> O heavenly Moon, circling with magic hue,
> And mystic beauty all thy beams suffuse,
> Is not, in Love, thine own fair secret seen?
> Love smooths the rugged—love exalts the mean;
> Love, in each ray, inspires the hush'd alarm,
> Love silvers every shadow into charm!
>
> (*The New Timon*).

The poet Southey wrote:

> Then the moon, in all her pride,
> Like a spirit glorified,
> Filled and overflowed the night
> With revelations of her light.
>
> (*The Close of the Century*).

And dear Longfellow says:

> The cloudless moon roofs the whole city, as with tiles of silver.
>
> (*Daylight and Moonlight*).

And one more, from Byron this time:

> The silver light, which, hallowing tree and tower,
> Sheds beauty and deep softness o'er the whole,
> Breathes also to the heart, and o'er it throws
> A loving languor, which is not repose.
>
> (*Don Juan*).

But what of those countless specks of light—the stars? How can they have any real influence on our lives, upon human character and endeavour, to either lift that character up or to wear it down?

Sunlight but gives us a realization of our immediate surroundings; starlight invites us into the infinity of space, and takes us away from our four-walled environments to realms at once unfathomed and unfathomable; from the merely physical and commercial to the inner mental and spiritual—a great and wonderful journey!

You will agree with me when I say that there are both good influences, and influences that are not for good. We all are daily and hourly being influenced for good and bad; but the influences that I would refer you to tonight are pre-eminently those that make for culture, knowledge, and veneration, which is a synonym for Love, which is the most beautiful, as it is the only permanent real thing in this ever changing sphere of action that we call LIFE.

The influence of the stars has been felt by every people of every country, in every age, of which we have any knowledge; that is, by all peoples, who have advanced sufficiently to possess a literature and whose literature has itself advanced sufficiently to extol the virtues, and, especially, the greatest of all virtues, LOVE.

All thinkers and writers of pre-eminence, in all the ages whose traditional words, or written works, still excite the wonder and admiration of our world, have acquired the greater measure of their best inspirations *by night,* that solemn period when the stars bend down to us and shower our little globe with their kind celestial rays.

We do not sufficiently cultivate the friendship of the night. We are apt to separate the night, by too sharp a line, from the day. "We close the night out from us by shutters and thick curtains, and we reject her stars for our little lamps!" By day, owing to the superlative light of that great luminary, the sun, we cannot become observant of the stars; but they are there, as you know, nevertheless.

It is the dreamer, thinker, student and writer, "Oft in the stilly night", who has drawn the world's attention to the stars; it is the poets of each and all generations, who have penned immortal lines, that have made us better acquainted with and taught us to love those everlasting orbs of light; and it is the so-called visionary, who has clothed them with names and even personalities, as did the Greeks and Romans, the most ancient Chinese, and other great races, including the Hindus and the Chaldeans and Egyptians; as it is the seers and the astrologers, and later the astronomers, devoting whole lives to persevering study and patient research, who have sought to explain the origin and form and nature of the stars to us; all combining to bring the stars nearer to us, who are, like

myself, mere laymen; and to us, who lack their intuitive fire and keen imagination and artistry, and who help us to understand the sublime beneficience and benign influence of those myriad oases in space—the kindly stars.

In the real architecture of the stellar system, we have but seen a few stones of the storeys, nearest to our mundane vision, the mere outside surface of a part of The House, within which are "many mansions", The Great House of the True Heavens. We have only just seen a faint gleam from those windows that face us in the gloom of our small world's night; windows that are lighted by eternal lamps, so far away that their rays are only now reaching us, and whose significance we can but dimly surmise. All honour to the watchers of the night, who seek the light, and who hand down to us, who cannot join in the search with them, the fruits of their labour of love. The truth waits to be found. It awaits our efforts to reveal itself to us. But, if we cannot ourselves take the journey, in faith, to the stars, we must indeed be grateful to the great minds, the poets and the astronomers who bring the stars to us.

THE NIGHT-SKY

Amongst vast tomes, in God's Great Library of Time,
The Night-sky is the oldest picture-book of all,
Whose countless pages, kilo-parsec-wide, sublime,
Are ever turning, as the gliding ages fall
Athwart revolving, speeding planets, æons-old;
And they, in turn, reflecting Heaven's glorious Light,
Do form the illustrations of "Creation's Might";
Love, all-embracing, is its cover—bound in gold!

How trivial, now, seems Earth's short paragraph of years;
How brief the lines that mention e'en the brightest star,
Compared with all the volume of His "Cure for tears"—
The Love Divine, that holds the Heavens where they are!
The stars are but the dots of "i's", in words He penned
Upon the Night-sky's great initial page, in Light;
The first conception, given Man, of Wondrous Might—
"Creation's Plan", that noblest Poem—by Man's Friend!

KILBEE GORDON

If I have gone out of my way to extol the influences of the night, I have done so purposely; because I find that from solitude has come all the world's greatest and deepest thought, and solitude is the more easily to be found at night; just as the study of the stars is only possible at night; and solitude and the stars have given us, throughout the history of mankind, the noblest thoughts; and this is not to be wondered at, when we realize that we must go through the shadow to appreciate the light. It is so in all individual lives, and it is true in all individual endeavour, that the knowledge of the bitter is needed to give us a just appreciation of the sweet.

Now, let us look at the results of this night study and observation of the stars, that has been going on ever since man became manly; let us glimpse at the results of his periods of solitude; at his growth of ideas, formed from his nocturnal observations and communings, his soul-searchings, his yearnings spiritual; his uttermost heart-outpourings in song; his very primitive earliest rituals; and, later, his writings in prose and outbursts of poetry; his, first hidden, beliefs; and his, later still, professed and widely spread Gospels, all encompassing the silent dignity of man's soul, as he strides from wonderment to admiration and from admiration to Love.

While wonderment at the sun and moon and stars was, no doubt, the first expression of the awakening human mind, there must have been, even in those far away times, a sense of great companionship and comfort, with the advent of the knowledge that there were spheres, in space, other than our own, although the idea of a sphere was not known, or even dreamed of, at that time.

The first idea, that we find recorded, was that the stars were chinks in the floor of the great roof of all-Heaven, and that this our world was a flat plate, with the comforting thought that, if we went too near the edge, we might fall off into—nothingness.

From wonderment and a sense of comfort came a belief in a great power that was the first cause of everything; and that led the infantile minds of the first of primitive peoples to infer that the great sun, which gave warmth and life to everything, was, if

not the great God Himself, at least it was His all-seeing eye, and that simple faith has always persisted with simple peoples; and, as a rider to that belief, the moon came in for an almost equal amount of veneration and adoration.

In passing, let me state briefly, the symbol of the all-seeing eye is distinctly solar in its character. In most of the ancient languages of Asia, eye and sun are expressed by the same word. Masons emblematically represent the omniscience of the Great Architect of the Universe, in like manner. The Canaanite symbol for the sun was an upright stone, but the most popular and ancient symbol was the eye. The Persians, Egyptians, Hindus, Greeks, early Teutons, all regarded the sun as the eye of their own particular deity, and used an eye, or winged circle, to represent omniscience. Sun-worship, however, has a place of its own, and I must return to my friends—the stars.

The stars, in the infinity of space, were not so often or as easily met with, for the primitive races, unlike the people of today, were daylight folk, and, like the lower animals, they retired to their sleeping places at the going down of the sun, early; and, not having the security of life that we enjoy, they missed the opportunity to sit up and commune with nature, that we possess, and the right to study and learn to love the stars.

So far, we have found out that the sun and moon exerted their influences on the minds of mankind, firstly of all the heavenly bodies. They were larger, apparently; nearer, apparently, and were therefore the easier to observe; and the results of their influence on man's temporary habitation, earth, was the easier to connote and weigh. To the primitive intelligence, they were the Supreme Deities; and they were accordingly feared and worshipped. rather than loved.

The influences of the stars were only arrived at, so to speak, when a degree of culture and civilization had intruded into the lives of the earliest dwellers of the then sparsely inhabited globe; when records began to be kept of events; when travel and emigration followed, as a result of enquiring curiosity, or love of adventure, or the vicissitudes of fortune, or the pressure of over-population,

which led to the interesting discovery that there were other lands to conquer and other seas to sail.

Then man's inherent imagination awoke, and the stars were duly consulted for their most propitious omens, and men learnt to guide their wandering footsteps, or their frail barques, by their shining rays. At the same time, men learnt to love and reverence the stars, and slowly at first, but surely, there crept into the languages of the ancients allusions to those far-off points of light, to mellow man's speech, to raise his hopes, to spur his speculative imaginings and to guide his ways.

> But who can count the stars of Heaven,
> Who sing their influence on this lower world?
>
> (Thomson, *Seasons*)

> One sun by day, by night ten thousand shine,
> And light us deep unto the Deity;
> How boundless in magnificence and might!
> O, what a confluence of ethereal fires,
> From urns outnumbered, down the steep of Heaven,
> Streams to a point and centres in my sight!
>
> (Young, *Night-thoughts*)

I am sure you will agree with me that this our little world is very beautiful; that in every way it is a just and wonderful conception of Almightiness; that the Creator could not have made or devised anything more beautiful or appropriately applicable to our human natures than that which is. All that we need is a thoughtful and contemplative attitude—to measure and apply, according to our capacity, this most glorious inheritance that has befallen us, for we are custodians of this inheritance; and, I verily believe, that some men, yea, many men have been doing this for ages, the seers, thinkers, poets and the scientists; and, with all their work and application, they have found a culmination in the study of the stars, our brother-worlds in the great family of the universe; and they have gained thereby a broader, higher, deeper conception of the eternal fitness of all things, and a still closer, truer idea of the highest Reality—Personality; and now, science, ever reaching out

for the Truth, never satisfied with a mere half-knowledge, is but one form of our very human and impassioned expression of hope, which is indeed poetry, the truest poetry.

> Of that something far more deeply infused,
> Whose dwelling is the Light of Setting Suns—
> A motion and a Spirit, that impels
> All thinking things, all objects of all thought!

My own first impression of the stars at night was obtained at Douglas, in the Isle of Man, in 1882. I well recall being allowed to get up out of bed, to look out of the window of an adjoining room, across a rather more than cold passage, and of gazing at a comet in a field of stars. Of my awe and astonishment; of asking many questions; of the dear lady, who kept the little school I first attended on my return from India; of my sudden and intense interest in the first Book of Genesis, which was my first text book, in both senses; and, when I commenced the preparation of this paper, at the request of my friend, Mr. Pearce, that was the first book of reference I went to; for it is the earliest, or one of the earliest accounts we have of "In the beginning—".

The Book of Genesis is accredited to Moses, a man who spent so much of his time, as all great thinkers have done, alone, in solitude and under the stars, in that soul communion, without which he never could have become the great leader of his people that he was, the great thinker, writer, law-giver and poet, that we now recognize him to have been.

The first three chapters of Genesis constitute an Oriental Poem, in prose of the greatest beauty, teaching deep spiritual truths, and not unscientific, when properly understood; and Milton made, of all that, an occidental poem, in blank verse, that is unsurpassed for loveliness in the English language.

Thus, the stellar influences gave us Genesis; Genesis gave us David, Dante, Shakespeare, Milton, and all the greatest poets we have been privileged to know; and the world is better and richer for all these thinkers and writers, and

> Earth is crammed with Heaven,
> And every common bush aflame with God!

Some of you will be surprised at my calling Moses a poet. I had better, at this stage, explain the true meaning of that word, as I understand it; there being no word in all the dictionaries so often misused and so grossly misunderstood. In the dictionary, we find: Poetry: The art of expressing, in melodious words, the thoughts which are the creations of feeling and imagination. Utterance in song; metrical composition. Verse: A line of poetry; metrical arrangement of language; by some termed poetry.

Now, I don't know how that appeals to you. But it most certainly does not appeal to me to be entirely satisfactory. It does not satisfy me. There are many volumes labelled, "Poetry", that contain much verse and very little poetry. There are also many volumes, not even labelled "Verse", that contain some superb poems, amongst a mass of beautiful prose.

Dr. Johnson was asked: "What is Poetry?" and he replied: "It is much easier, Sir, to say that which it is not!" A clever answer, but unfortunately it does not help us. Verse is unipartite; that is, capable of producing but one idea, at a time. Poetry is complex; that is, composed of two or more things, capable of embracing and expressing more than one idea; all-embracing. Does that help us?

Good verse and bad verse differ in craftsmanship. Even the best verse may be equally well expressed in prose, without losing its essential significance. Sometimes, in fact, it can be even better expressed in good prose. Now, we have advanced. Still we have not arrived at what poetry is.

Anyone can write verse—of a kind; the kind we see so often in the columns of the daily papers. But, *only a poet can write poetry.*

Who and what is a poet? They are very few and far between, in all our little world's history. *A poet is one, who has supernormal vision, insight and true soul-intuition!* Let me repeat that. A poet is one, who has supernormal vision, insight and true soul-intuition! He sees and feels things, that are beyond the range of the ordinary man's sight and feeling, and he knows how to express his wonderful thoughts, through the medium of his own tongue, or language, in the very choicest words, and still within the mental horizon of his fellows, who possess the rather more than average of intelli-

gence; he illuminates for us the truths, which our more prosaic minds had not been able to see, or grasp, or had only dimly perceived.

> Unto the poet, light, in broken gleams,
> Shines from the misty haven of his dreams.

And, if we read, "Heaven", instead of "Haven", both being places of rest and safety and security, you will the better catch my meaning, when I say the poets have received their chiefest inspirations from the stars, that is, from the heavens, while the verse-writer merely re-echoes what he or she has caught of the true poet's light-piercing soul.

> Unto the poet, light, in broken gleams,
> Shines from the misty heaven of his dreams.

"Misty", means what we see indistinctly, as "through a glass darkly!" And who wrote that? If ever there was a man, who was influenced by the Light that comes from the stars, it was St. Paul, and where is there a writer and poet whose influence has been greater, for good, than St. Paul?

In short, a verse is a common, everyday occurrence.

A poem is—a *miracle!*

Tom Hood says: "A poet is created, not manufactured." That is, of course, a paraphrase of Cicero's famous saying: "We are born poets; we make ourselves orators." Poetical genius is a gift, but education and perseverance will make almost anyone a versifier. As logic does not supply you with arguments, but only defines the mode in which they are to be expressed, or used, so versification does not teach you how to write poetry, but how to construct verse. Versification and logic are to poetry and reason what a parapet is to a bridge; they do not convey you across, but prevent you from falling over.

The poet gives to the world, in his sublime thoughts, diamonds of the purest water. It would be idle to quibble about minor points of the polishing and setting of such gems—they would lose in the process; but the writer of verses does not—and should not —pretend to give us diamonds. He offers us paste brilliants; and,

therefore, it the more behooves him to see to the perfection of the cutting and setting, on which their beauty so largely depends.

The thoughts presented by the poet may be rough-hewn; the fancies of the versifier may be accurately finished, and most becomingly set. *Poetry, therefore, abounds in licences; while versification boasts only of laws!*

What would our world be if there had been no poetry? No Bible! No Psalms of David! No Shakespeare! No Dickens, Thackeray, Scott, Smollett, Fielding; no Tennyson, Wordsworth, no Burns; no great Oratorios, by the great composers; no superb art galleries; and I venture the humble opinion, but with every assurance that I am right, that if our knowledge of space, surrounding this little habitation of the human race, had only included the fact of the sun and moon, as our celestial neighbours; had there been no stars to fill the night-sky, man would never have realized the great power of the Creator, never would have had any hope or aspirations or inspirations; would never have thought, or lived, or sung, or written any poems; nay more, he would never have survived to this day, with so little to sustain and help him to develop and complete his soul.

The influence of the stars is, firstly, *Emotional; secondly, Devotional; thirdly, Inspirational; and, always, Educational.*

Those "Outer Rooms", the Stars, have always solicited our wonder and love; we, who are cooped up, as it were, for what we term a life-time, in this one small planet. Just as the small boy at school thinks his terms, at school, are a veritable "life-time".

We are in but the basement of the House of many mansions, eternal in the Heavens. We cannot tell very much about those great outer rooms, when all we see is the reflected and sometimes direct light from the upper windows. We are not, yet, permitted to go upstairs to explore the rest of the House; nor are we, yet, fitted for that greater elevation; but we are told to "seek", that is: to explore in speculation and with faith, which is but another form of Love, those outer rooms, and to abide that greater knowledge till we are the better able to understand the nobler architecture of those very outer rooms—the Stars.

I claim that every great teacher of noble ways of living was, and is, a poet; and that is why I claim the Bible to be the greatest collection of superb poems that we have, for it is most certainly the fount of the inspirations of the poets, and there has been nothing written, since its pages were first lived and then transferred to written documents, that has been an equal influence for good in the world, and it is the well of knowledge, it is full of the influence of the stars, the very story of the heavens, and it has so coloured our imagination, our speech and our national mother-tongue, that even the very daily vernacular of the non-thinking, or the Bible-jeering, men of the everyday world, is mostly a mass of unintentional and inherent quotations from one part of that collection of the world's choicest word-pictures, or another.

"I won't let the grass grow under *my* feet", says one rushing business man to another, and, all unconsciously, he is quoting from a book he seldom opens.

Minus stellar influences, we should have to deplete our libraries, and destroy our hymnology. If this has never occurred to you, and you have only thought of the Bible and other great collections, of what are termed "sacred writings", as being merely religious text-books, of historical treatises, then, when you read your Tennyson, Wordsworth, Longfellow, Goethe, Schiller, or any other favorite poet of this or any other land, or period, ancient or modern, remember that, without any exception, all the greatest thinkers, writers and lovers of the best in art, music, poetry and life, have been students of the Scriptures, whether they were adherents of a faith, or not, and that all the sacred writings, of all peoples, are full of references to the stars, or heavenly bodies, and that, without their benign and loving influences, there would have been but little of hope, less of learning and no devotion or Love.

> Diving and finding no pearls in the sea,
> Blame not the ocean—the fault is in thee!

May I be forgiven for paraphrasing that lovely couplet?

> Soaring and studying the stars in their flight,
> Forget not this lesson: Love is their Light!

And according to the wonderful knowledge the patient searchers after truth, from the time of the earliest peoples to those of the present day, have found out, we know that light travels at incredible speed; that sound travels with a less, but still most wonderful rapidity, and that thought travels fast, too; but do we realize that Love is the only force that is instantaneous, and its measure cannot be reckoned, nor its powers fully understood, unless we add faith to our heart calculations.

Light is but one of Love's multifold manifestations. The original sense and meaning of the word "Light" was, not merely to shine, or gleam, but to throw, to break out, to dart, *to pelt*. And that is just what the stars do, they *pelt* us with light, Light is the agent which produces vision; it is either a material substance, (and mind you, it takes TIME for Light to travel) a material substance of extreme subtlety; or, it is the incredibly swift undulations of an independent medium, set in motion by a luminous body. White light, as you know, is composed of seven different colors; we get our great supply of light from the sun, reflected light from the moon.

A great writer of the Victorian era, and my own favorite poet and novelist, said: "It is the property of Light to travel; and when a man has Light within him, forth it must go".

All our best literature is permeated with the light of the stars. Another and later writer says: "Genius is Light, reflected in man's heart from the Divine Creator of Light. Genius-Light, is one manifestation of inspiration-Love."

Bulwer Lytton says: "Genius is a fine observation, strengthened by a constant fixity of purpose! In life, as in art, the beautiful moves in curves". Also: "A farthing candle is more convenient, for household purposes, than the stars; but, go to men for your philosophy, to the stars for consolation!" and he was one of our deepest thinkers, and himself spent so many years in contemplation and study of the stars.

And what about comfort? So many of the great thinkers have held that the chief influence of the stars, more surely than any other, is their kindly gift to man of consolation and comfort, and comfort means "Strengthening", and we all need strengthening—at times.

COMFORT

Hast ever spent the night in prayer,
Upon thy knees, beside thy bed;
With tear-stained eyes, oppressed with care,
Heart-broken, hopeless, arms outspread?

Then—looking upward, for reply
To thy petitions, stars didst see;
Soft—heard them answer, bending nigh
And bringing love and life to thee?

Hast ever choked the bitter sob,
That rose within thy throat, again;
Held back a sigh, or stilled heart-throb,
That others might not guess thy pain?

Then—thou hast lived and loved and pined;
And thou hast sorrowed, manfully!
And, greatest joy hast thou divined—
When stars bent low to comfort thee!

KILBEE GORDON

I am indeed sorry that I cannot spare the time to read you lines from the works of Goethe, Schiller, Lessing, Heine and others, to show you how, in their land, the marvelous influence of the stars has woven their beams into all the best thought and is so much in evidence, also, in the work of their greatest and best known musicians, as well as in the poetry of their country.

The Bible is so full of references to light, the heavens, the sun, moon and stars, that to remove them and their prophetical inferences from its sacred pages, would be to deplete it altogether.

"God called the light, day, and the darkness He called night." Lovely language. Rhyme is not necessary to the embellishment of a great conception, but it does help us to understand and remember the idea to be conveyed.

Listen to this, from Milton's *Paradise Lost*:

"Let there be light!" said God; and forthwith Light
Ethereal, first of things, quintessence pure,
Sprung from the deep; and, from her native east,
To journey through the aery gloom began,
Spher'd in a radiant cloud!

Spher'd in a radiant cloud. What more wonderful tribute has been written of the nebular theory of evolution?

"And God made two great lights . . . . (Genesis.)

"I have set thee to be a Light to the Gentiles." (Acts xiii).

"Light, understanding and wisdom was found in him." (Daniel). The use of the singular is interesting. Here, light, understanding and wisdom are described as one. St. John, whose whole life of the Christ, and his Book of Revelations, are truly poetic, in the sense that they are great conceptions, clothed in the most beautiful language, says: "God is Light"; and Christ said: "God is Love", and I believe both, and affirm that Love, and Light and understanding, and wisdom are one.

My own favorite hymn has always been: "When morning gilds the skies", with its superb music by Sir Joseph Barnby, but you all know it; instead, I will read a new hymn, suggested by the twin declarations of St. John and The Christ, which I alluded to a moment ago.

HIS JEWELS

O! God is Love, and God is Light!
And, O! the sunshine of His smile;
The stars above, that shine all night,
They are His jewels most worthwhile!

And you and I, His children are,
And, O! the sweetness of His Love;
That comes to all, or near, or far,
From jewelled Throne of Light, above!

There is no waste within all space!
And, O! the kindness of His Hands;
So full of tenderness and grace
That interstellar space commands!

From star to star, from orb to orb,
And, O! the goodness of it all;
That we this Love may, too, absorb,
That cares, when even sparrows fall!

There is a necklace in the sky;
And, O! the ruby pendant, there;
The one of countless gems that I
Amongst those treasures find most fair!

And God is Love, and God is Light!
And, O! the radiance of His smile;
The stars above, that shine all night,
Our jewels are to love—all-while!

(K.G.)

Perhaps, with the exception of His most poetic statement, "God is Love", His most eloquent and poetic words may be said to be the following: "I am the Light of the world!" That was a living, noble conception of His Divinity, framed in golden words, and the very basis of all our creed and beliefs and hopes. More poetical books have been evolved around the very sense of that statement, than almost all the other poetical ethics of the Bible; and we all know that that book has had a larger circulation than any other, in all lands, and in all tongues. I claim that the Bible, which is founded on man's observation and the influences derived from the most marvellous night-sky phenomena, has indeed coloured our thoughts, our language and our daily life, more than some of us realize.

"I am the Light of the World."

Can you conceive of a more loving, beautiful and all entrancing thought, truly poetical, even after all the translations it has undergone, since it was uttered 2,000 years ago, originally, in the Aramaic, through its migrations, via Greek culture and Roman criticism, and the distortions of our own and other languages, while they were in a state of transition and growth, and so to the present day. As far as I know, Aramaic is indeed a dead language. We have practically nothing in writing of the language of the common people of that period, in Palestine.

We speak of the light of the stars, some of which have only just reached us, and then—only after a journey that has occupied centuries; but, here is one of many rays from the very Star of Bethlehem, and one of celestial beauty and hope, an inspiring

influence, that has, sad to say, not reached some of us yet, after 2,000 years of travel and after suffering the *"bending"* influences of translations, good, bad and indifferent; still with its original lustre and fire; still with its fine message of consolation and comfort; and still, like other poetic utterances of the greatest of all poets, exerting its undiminished and benign influence on a world, that is in sore need of The Light.

I could give you allusions to the Light of the stars, from this same book, that would take all of a month to read and digest, but I must limit myself to just two more, now.

Isaiah (ch. lviii) says: "Then shall thy Light break forth as the morning."

And you will recall David's fervent appeal:

"Lord, lift thou the Light of thy countenance upon us!" And, "in Thy Light shall we see light." (Ps. 36.4.)
And the declaration of the three Wise Men: "We have seen His Star in the east!" The whole Book of Books teems with poetical and lovely phrases, and, most of them, have reference to the Heavenly bodies. *It is the textbook of all thinkers and the first and foremost lexicon of all literatures.*

Let me close my remarks, as to the word "Light", with this observation: We speak of our windows—as lights, sky-lights, etc. The stars are the windows, that enable us to see within, however dimly, the glory of the House of the Creator; and what a House! To-day, the astronomers compute there are some thirty thousand millions of windows, lights, stars. No wonder our very limited conceptions of life and eternity are so greatly influenced by the study, however humble that study may be, and by our wonder of and admiration for—the stars.

Those of you who were privileged to hear that wonderful scientist and true poet, Sir Oliver Lodge, a few years ago, in the Royal Victoria Theatre, will recall that he summed up his message in words of fire: "My study of the stars and all the celestial phenomena has brought home to me the reality of our immortality." Of course, those are not the exact words, but I had the pleasure of hearing him and his message and that was the gist of his thought.

A few days ago I received the letter he sent to those who had written to him at the time of the passing of Lady Lodge, and one paragraph I shall read to you, as it shows how consoling is the message of the Psalms of David and the superb poem of our greatest poet, Tennyson.

"She often recited portions of the 23rd Psalm and "Crossing the Bar", while she was lying weak and helpless. We are not presumptuous enough to expect that the ineffable meeting with "her Pilot" has yet occurred,—all in due time; but we know and already have information that she was met and welcomed by her beloved son and daughter, and she was allowed to send us a characteristic and evidential message before being taken by them to rest and recuperation."

How natural! Just what one would expect—on going Home, To be met by those friends and relations who were already there, to be greeted and taken home for a rest, and later, "all in due time", to be ushered, into the presence of The King!

We have just been honored by a short visit to our city from the "Light of Asia", Sir Rabindranath Tagore. Let me read a few lines from his poem to his Motherland:

> Mother, my sun had set. "Come, child," you said;
> You drew me to your side, and on my head,
> Kissing me, set an everlasting Light!

One of the finest tributes paid to the poetry of Tagore has flowed from the pen of the great Irish poet, W. B. Yeats; and I am very sorry I could not find a copy to read to you here. But, as a very poor substitute, I will read you a sonnet from this morning's "Colonist".

TAGORE

> Tinged, as with rose, The Light comes from the East
> And floods Earth's plain with Love and warm sunshine,
> Gold-fringed, around Dawn's composite design
> Of Oriental Splendor! So, Day's priest
> Requires us, ere heavy night hath ceased,
> Emerge from slumber's net; with joy incline
> To worship, at the early morning shrine,
> Where Dawn advances and the Dark is leashed!

Tinged, as with rose, The Light from Asia came—
And floods Earth's sphere with saintly Love and kind
Good tidings of great joy to all, below;
Old thought-rays brings us, bright as Holy Flame,
Rekindling love in cold hearts; opening blind,
Evasive eyes and healing wounds of long ago!

(K.G.)

There has never been a more beautiful short story, a poem in prose, written many centuries ago, than the Book of Ruth, and you may wonder why I mention it in a paper on Stellar Influences; well, just to show you that poetry is not of necessity in rhyme, and to prove what I stated, that the Bible is full of true poetry. No poet has ever written a more exquisite love appeal than contained in the sublime words of Ruth to Naomi:

> "Entreat me not to leave thee, or to return from following after thee: for whither thou goest, I will go; and where thou lodgest, I will lodge: thy people shall be my people, and thy God, my God!"

And while this our earth and our sister planets are so indissolubly bound to the monarch of the heaven, the sun, so are we also bound forever to those distant spheres, the stars, in our hearts, our minds, and our understanding.

Each individual has his orbit in the universe we create about us; we are singing spheres, that liven all within reach of our rays, or we are dead worlds, that afford no lustre to our immediate environment, according to our mental and spiritual equipment and development.

If we are singing stars, the rays of our interstellar influences radiate to the individual world about us, and continually add to the general mass of good; but, there are many dead worlds, too, that shed no light, that are but derelicts on the great sidereal sea of Eternal Space.

Hazlitt says: "The heavens have gone further off and become Astronomical". But, surely the faith and imagery of the poets has brought them nearer, again, to us, who read their great works.

> Wander with me through the star-sown abysses of space;
> Sail, with me, at twilight, up the Channels of Great Mercy;
> Along pathways always bright, for the stepping stones that
> Unite the spheres, are the resting places prepared for us,
> In the myriad stars scintillating Light.—(K.G.)

Our own hearts are the life-telephones, that hang on the walls of our true habitations; and, though the messages that ring in our mental ears, come from such a long distance, if we, in our innermost hearts are attuned to the Eternal vibrations, then, the Stellar influences, that come from farthest space, through the thoughts, words and actions of our sphere's noblest and best intelligences, we shall hear the very voices of the stars themselves, that "sing their shining way through space".

TWILIGHT VOICES

(A Hymn to the Night)

Hark to the singing stars, to-night,
Spinning their shining way through space!
View well—the gently waning light,
That soothes thy weary eyes! And trace
Of wings, invisible, the flight,
That softly touch thine up-turned face!

For, kindly Angels would draw nigh,
From out the evening sky—to thee!
To bring thee Love and Peace and Grace!

Hark to the laughter of each sphere,
As though kind Angels did rejoice;
Or smiles of gladness, in some dear,
Loved, so-called dead, fond voice,
Should bid thee dry each futile tear
And make of Joy thy lasting choice!

For, kindly Angels would draw nigh,
From out the evening sky—to thee!
To bring thee Rest and Calm and Poise!

Be glad thou canst such gladness see!
Be glad thou hast such gladness known!
For thou canst be what thou wouldst be,
Canst make their 'Song of Love' thine own!
Then all the stars shall sing to thee,
Shall sing to thee of Love alone!

> And Angels ever shall draw nigh,
> From out the evening sky—to thee!
> To bring thee nearer to Love's Throne!
>
> (K.G. in *Rhoda*, a play.)

Next to the authors of the Bible, I would place the works of the immortal Shakespeare; and I believe I am right in saying, that all other civilized peoples, of today, place his great plays and poems as ranking as the most inspirational and poetic literary influence in the world, next to the Scriptures.

If we take away those passages, that are directly or even indirectly influenced by the stars, and his quotations from the Bible, and his references to the classics, (themselves founded on the myths of the Greeks and Romans) there would not be much left of Shakespeare for us to read.

However, both Milton and Shakespeare had little of the true astronomical knowledge that we possess to day and astrophysics had not arisen on the world's mental horizon in their time.

Many of their deductions from observations of and references to the stars were in error, owing to the superstition and ignorance of their times; but I claim that *Paradise Lost* and *Regained*, and the immortal plays, would not have been written had it not been for their author's interest and reverence for the heavenly bodies—the stars.

Shakespeare is constant in his reference to the influence of the stars on mundane affairs. He says:

> It is the stars, the stars above us, govern our conditions; else, one selfmate and mate could not beget such different issues.

His insistent pratings of the stellar influences, although taking complexion from the magic of astrology, rather than from the knowledge of astronomy, is yet another proof of my contention: that all writers, thinkers and men of action have been influenced, according to the light of their little day, by the stars—the charitable stars.

Listen to this: a love song indeed!

There's not the smallest orb which thou behold'st,
But, in his motion, like an angel sings,
Still quiring to the young-eyed cherubims.
Such harmony is in immortal souls;
But whilst this muddy vesture of decay
Dost grossly close us in, we cannot hear it!"
(Lorenzo to Jessica, in the garden at Belmont.)

And again, from *Twelfth Night,* Olivia to Viola.

"But would you undertake another suit;
I had rather you solicit that
Than music from the spheres."

Let me read you a modern version of a similar thought:

LIFE'S MUSIC

Kind thoughts, kind acts—they are that make a King;
They fill the farthest firmament with fire;
They loosen melody from soul-desire;
They flood the Universe with hearts that sing;
They permeate all Life and everything
Becomes its better-self; and even ire
Is turned to Loving; for, in Heaven's choir
Are voices kind, that rob Death of its sting!

Who thinks and acts in concert with the Christ,
Although his very heart-blood—sacrificed—
Stains all the rugged pathway he must tread,
May listen to seraphic harmony;
Or, better still, himself, eternally,
Play—gladly—in God's orchestra, instead! (K.G.)

I love these lines in Julius Caesar, spoken by Cassius to Brutus:

The fault, dear Brutus, is not in our stars,
But in ourselves, that we are underlings!

And does not that convey the same thought that I already read to you in the lovely couplet:

Diving, and finding no pearls in the sea,
Blame not the ocean; the fault is in thee.

Shakespeare likens the sun to a "King in noble eminence enthroned, ruling the Earth and the planets." Like an admiral, he guides his fleet, unerringly, over the azure ocean of space; his despatches go

forth, swifter than the wings of light, and each planet, satellite, comet and meteor, turns in his course, at the appointed time and place and circles round his fiery throne.

> The glorious sun,
> Stays in his course, and plays the alchemist;
> Turning, with splendor of his precious eye,
> The meagre cloddy earth—to glittering gold.
>
> (*King John*, Act iii.)

And Moore says:

> See the sun himself! on wings
> Of glory up the east he springs.
> Angel of light! who from the time
> Those heavens began their march sublime,
> Hath, first of all the starry choir,
> Trod in his Maker's steps of fire.
>
> (*Lalla Rookh*)

Newton discovered the law of gravitation seventy years after the death of Shakespeare, but before his day there were many foreshadowings and suggestions of the attraction of the earth.

> But the strong base and building of my love
> Is as the very centre of the Earth
> Drawing all things to it. (*Troilus and Cressida*)

Shakespeare has said some very lovely things and made many allusions to the moon:

> You may as well forbid the sea for to obey the moon,
> As by oath remove or counsel shake the fabric of his folly.
>
> (*Winter's Tale*)

And, in *Timon of Athens*, we find:

> The moon's an arrant thief,
> And her pale fire she snatches from the sun.

The phenomenon of the changes in the moon is most fully employed by Shakespeare in one of the most tender passages in *Romeo and Juliet*:

Romeo. Lady, by yonder blessed moon I swear,
That tips with silver all these fruit-tree tops.

Juliet. O swear not by the moon, the inconstant moon,
That monthly changes in her circled orb,
Lest that thy love prove likewise variable.

In all ages, lovers have sworn in the fire of their love, by the moon, and have, therefore, in their very calmness forsworn themselves.

Shakespeare was a close observer of the skies at night. His references to the stars are so numerous, that it is quite impossible to mention more than a few to-night.

The North Star and its immovability are often mentioned:

> I am constant as the Northern Star,
> Of whose true fixed and resting quality
> There is no fellow in the firmament.

So many of the constellations, too, are referred to. The Great Bear is mentioned as Charles's Wain and also as the Ursa Major. And my friends, the Pleiades, are not forgotten. Shakespeare makes Falstaff his observer:

> Indeed, you came near me, now, Hal; for we,
> That take purses, go by the Moon and the Seven Stars;
> And not by Phoebus. (*I. Henry*, IV. 1.2)

And, of course, he refers to the comets, as known in his day:

> When beggars die there are no comets seen;
> The heavens themselves blaze forth the death of Princes.
> (*Julius Caesar*, II)

It is Plutarch who is responsible for the tradition that a comet flamed in the sky, when Brutus struck. Had Shakespeare lived in a later day, he would have had a much greater knowledge of the stars, and so could have drawn on a still richer bank for his superb poetry.

Is there, in all our poets, anything to match this lovely invocation of Romeo to Juliet?

> Two of the fairest stars in all the heaven,
> Having some business, do intreat her eyes
> To twinkle in their spheres till they return.
> What if her eyes were there, they in her head?
> The brightness of her cheek would shame those stars,
> As daylight doth a lamp; her eye in heaven
> Would, through the airy region, stream so bright,
> That birds would sing and think it were not night.

And Juliet exclaims:

> Come, gentle night, come, loving black-browed night,
> Give me my Romeo; and, when he shall die,
> Take him and cut him out in little stars,
> And he will make the face of heaven so fine,
> That all the world will be in love with night!

And, in the *Merchant of Venice,* Lorenzo speaks to Jessica:

> Look how the floor of heaven
> Is thick inlaid with patines of bright gold!

And, in *Hamlet,* we read:

> This majestical roof fretted with golden fire!

Thus the handiwork of the Omnipotent draws forth what is finest and best—of thought and speech in man, and the everlasting starry firmament inspires and stirs up the poetic soul to its highest and noblest expression in "Musical Thought", which we term poetry. The term musical thought stirs up many memories in my mind, and I take the liberty of reading a few lines on

MUSIC

Music is Love—turned into sound—
And may be met with everywhere;
Race-running brooks, where birds abound,
Joyfully singing paeans rare;

On the near shores, where wavelets play,
Rushing madly o'er golden strand;
In the wild lashing of the spray;
Every sweet tone at thy command.

Just heart—remember all you hear,
Under the trees and stars, with glee;
During great storms; when skies are clear;
Dawn or dusk, Life's music is free!

And music is love—turned into sound—
That may be met with everywhere! (K.G.)

A great writer has said: "The grandeur of an earthly palace is measured by its distance from east to west and from north to south, but the grandeur of a poem is to be measured only by its ***nearness to Heaven!***"

And what of all our superb and glorious pictures, by the world's great artists? What of all the vast collections, of untold wealth, in the art galleries of the nations? Inspired by the lore and learning of the classics, or inspired by the Holy Scriptures, and therefore as children of the great Influence of the stars.

THE GREAT HUMILITY

An artist stepped aside—his work to view,
With love retouching it—and greatest care;
Then, smilingly, pronounced it good and fair;
Most humbly hoping others find it—true.
But critics enviously exclaimed: "The hue
Is wrong; we could do better; we declare
The technique faulty, crude; and, this we swear,
If Master-hand is here, 'twas Chance, that drew!"

The Great Designer-Architect, with pride,
His universes planned and oft renews
His work with love; He, humbly, stepped aside
To Earth; His wondrous work, again reviews—
From human hearts, who, looking to His sky,
Love Life's great canvas—drawn for you and I. (K.G.)

Blind Milton, shut in from the light of vernal bloom, or summer rose, or flocks, or human face divine, sung of things unattempted yet in prose or rhyme. He made the ages eloquent with his song, a song that swept at large through the compass of the whole Universe and through all heaven beyond it, and surveyed all periods of time, from before Creation to the consummation of all things.

Young, in his *Night Thoughts*, says: "The undevout astronomer is mad". The correlate of that thought would lead us to say: The devout man, who knows, nor enquires nothing, of astronomy, is also mad! for he fails to cultivate as he should those faculties given to him whereby his worship may be advanced.

Milton says: "These are Thy glorious works, Parent of Good, Almighty! Thine this universal frame, this wondrous Fair; Thyself how wondrous, then! Unspeakable!"

Briefly, Milton was one of the greatest scholars of his day. He was learned in French, Italian, and Hebrew; in science and philosophy. He was and is still regarded as the foremost scholar of the University of Cambridge. "His words are as rich garlands of flowers, festooned in some noble palace".

Carlyle said: "Great men are the inspired speaking and acting texts, whereof a chapter is completed, from epoch to epoch, and, by some, named *History*. The poets are therefore texts that have surely come under the influence of the stars. Let me read you two lovely verses by a great Canadian poet, Bliss Carman:

IN EXCELSIS

The new moon hangs in the wintry tree,
The spring rains march by the door,
The summer comes and the roses blow,
The mellow woods of Autumn glow,
And love is more and more.

The seasons pass, the strong winds die,
The sunlight steals from the wall,
The glittering planets wheel and sink,
The tides return to the ocean's brink,
And love is all in all.

Where the Greek astronomers had conceived the heliocentric motions of the planets, and the ingenious Ptolemy, brushing aside this theory, had invented a cumbrous mechanism of cycles and epicycles around the central earth, a system which for fourteen centuries sat enthroned; and Dante had built his Hell, Purgatory and Paradise, on poetic deductions from the *Almagest* of Ptolemy; and, where Kepler, who discovered the ellipticity of the planetary orbits, and Galileo shook, but did not overthrow these age-hoary theories—until God said: "Let Newton be"; Milton, in the midst of controversies, bitter and acrid, wrote his marvellous poems, himself as blind as had Galileo become. And yet, each had "The light of all the stars engraved upon the tablets of his soul".

Galileo was of the same land as Virgil, who wrote the greatest of all Latin epics, and the Cambridge scholar, Milton, was of England, and he gave us, to add to our treasury of great poetry, the greatest English epic ever written.

Young, in his *Night Thoughts,* asks:

Where ends this mighty building? Where
Begin the suburbs of Creation? Where the wall,
Whose battlements look o'er into the vale
Of none existence! Nothing's strange abode!
Say at what point of space Jehovah dropped
His slackened line and laid his balance by,
Made worlds, and measured Infinite no more?

What is the universe like, as far as our limited knowledge goes? Our sun has eight major planets. It would take a train, travelling 60 miles per hour, a hundred and seventy-six years to come from the sun to this earth; but, it would take the same train more than 5,000 years to go from the sun to Neptune.

That is the Solar system, and it is probably only one of many millions of solar systems. How true it is that we only see that which we comprehend; only hear that which we truly appreciate; only possess that which we make use of and Love!

The suns, commonly spoken of as stars, are innumerable. Twenty millions can be seen by large telescopes, and the camera shows so many more that parts of the heavens look like a solid mass of light. The distance of the nearest fixed star is four and a quarter light years, about twenty-four billion miles.

The great nebula in Orion is a thousand light-years away, and there are whole systems of suns a hundred times further still. Such is the known universe.

Millions and millions, countless millions of suns. Innumerable galaxies and systems of suns, separated by black gulfs of space, so wide that no one can realize the meaning of the figures which denote their span. Suns of flame and light, whirling at terrific speed, through oceans of immeasurable space, like great swarms of golden bees; and round them are planets revolving at thousands of miles a minute. Add to the stellar space the idea of stellar time. If it has taken the light of a star in Andromeda a hundred million years to reach the earth, that star must have been in existence a hundred million years ago.

Astronomy enters largely into the composition of Milton's Paradise Lost, and indeed it is difficult to understand how such a poem could have been written without a knowledge of the heavens and celestial orbs and of the theory of the universe.

No less than fourteen of the constellations are mentioned in "Paradise Lost",—Andromeda, Aries, Astrea, Centaurus, Cancer, Capricornus, Gemini, Leo, Libra, Ophiuchus, Orion, Scorpio, Taurus and Virgo. Milton also refers to Jupiter and Saturn and their satellites.

> And other suns, perhaps,
> With their attendant moons, thou wilt descry,
> Communicating male and female light.

The ancients entertained an idea of the existence of male and female light, and it is mentioned by Pliny; and, to-day, we still speak of His Majesty, the Sun, and Her Majesty, Luna, the Moon!

Milton refers to the Pleiades as "The Seven Atlantic Sisters". From time immemorial, they have been believed to shed happy influences upon the earth. I love his description of the newly created sun:

> First in his east, the glorious lamp was seen,
> Regent of Day, and all the horizon round,
> Invested with bright rays, jocund to run
> His longitude through Heaven's Highroad; the
> Gray Dawn; and the Pleiades before him danced,
> Shedding sweet influence.

Referring to the moon, he says:

> Her reign,
> With thousand lesser lights, dividual holds
> With thousand, thousand stars, that there appeared
> Spangling the hemisphere!

Milton knew the phases of Venus, and that she sometimes is in crescent, and so he writes, referring to the sun as the great source of light:

> "And hence the morning planet gilds her horns!"

No poet has given the world a more beautiful description of Evening, (Book IV, Lines 598-609).

In passing to other poets let me give a short story of a singular coincidence. Milton, in 1665, was driven out of London by the great plague. He passed his time in a country house, revising and re-writing his great poem, "Paradise Lost". Newton, in 1665, was also passing his life in a country house, in the enjoyment of its garden, thinking out his theory of gravitation, when an apple fell from its parent tree, to which we owe a great and lasting debt of gratitude. They were both poets, using the word in its very highest sense. The one conceived "Paradise Lost"—a gem; the other his "Principia", also a gem! Both works reveal God's all-immutable laws and adamantine truths, and both add to the inestimable

store of knowledge we have acquired, from what I term "Stellar Influences".

Milton died one hundred years before Kant or Laplace had suggested the nebular theory of Creation. Kant once said: "To him, the stars spelled the ineffable name of the Almighty". Later, Tennyson, that supreme melodist, wrote, under the sunlight of a later and clearer science:

> This world was once a fluid haze of light,
> Till toward the centre set the starry tides,
> And eddied into suns, that wheeling, cast
> The planets.

From these, and others, have we learnt all we know of the heavens and the message of the immaculate stars. Scientists have brought close to us the presence of an infinity of energy, but no personal infinities; such as Power, Beneficence, Wisdom and Love. That is what the poets have done for us.

Just as every particle of our earth has come, in the millions and millions of years, from space, and has sped to form our earth, so every thought and idea and action, growing from matter, has come from out the immensity which we call Space, back through awful time-depths to "The Beginning".

We must remember that we only see that which we comprehend. Science itself perpetually opens new doors to our contemplation, and the larger vision expands our minds.

Byron has aptly described the impression thus brought to bear upon our lives:

> And, Oh! Ye stars, which are the poetry of heaven,
> If, in your leaves, may be read the fate of men and
> Empires, surely we poor mortals may be forgiven,
> If, in our anticipations to be great,
> Our destinies o'erleap their mortal state—
> To claim a kinship with you!

If, amid this beauty and mystery of the great celestial immensities, the first feeling is that of our own insignificance, we may perhaps recognize how immeasurably vaster is the field of the wonderful universe about us than any little perception that has come to us in our short travels upon the Highway of Time. "Hope still sees a star and listening love can hear the echo of a wing!"

In conclusion, may I read you a few lines, written at Shawnigan

Lake, early this year, while alone and under the kind influence of the stars; and I take this opportunity of thanking you for so patiently listening to my rambling paper on Stellar Influences.

AND THE FARE IS—LOVE!

There's a purple, that is wholly
O'er the hills, receding slowly,
When the sun sets in his glorious array;
And the silver moon is rising,
Clouds her majesty disguising,
As the twilight draws a curtain o'er the day!

Here I watch the stars appearing,
From my cabin in the clearing,
And I offer up a prayer to Nature's King;
For the night that is approaching,
On the sunset rays encroaching,
Stills the birds; but just compels my heart to sing!

Oh! I love the midnight, dearly,
Then my brain works far more clearly,
And I know that someone, somewhere, softly calls;
All still moments thrill my being
When I am so close to seeing,
With the telescope of Love, great Heav'n's walls!

Far beyond the Milky Highway,
Far beyond the planets' by-way,
There are regions, where Love's peacefulness exists;
But, at dawn, or noon, or twilight,
There is far too vivid sky-light;
'Tis the star-beams, that my heart-soul ne'er resists!

Give me solitude and starlight,
Give me Love, to reach the far light,
Let me wander to the Pleiades and back;
We must travel single-minded;
God will see no mortal's blinded
Who entrains upon His meteoric track!

It is Love, that pays the fare to
Heaven's light, if we but dare to
Journey spaceward—to its love-full, peaceful day;
Travel light and soar there gaily;
Living lives, ennobled daily;
And the Great Conductor'll guard us all the way!

Victoria, B.C. KILBEE GORDON

REVIEW OF PUBLICATIONS

Astronomische Chronologie von P. V. Neugebauer. Two volumes, pages 200 and 136, 7 × 10 in. Berlin and Leipzig: Walter de Gruyter & Co., 1929. Price (bound) 40 RM.

This work is of great value to students of ancient history and to orientalists. The author aims to those without astronomical training the means of determining the date of any event which can be fixed by any celestial phenomenon,—such as an eclipse, or a conjunction of planets.

The author is on the staff of the German Rechen-Institut and has long been a student of chronology. He reviews practically all previous works in this field and tries to improve on them. The first volume gives explanations of the methods to be used, while the second contains tables which are required in the solution of the various problems which may arise. The titles of some of the chapters are:— phenomena of the daily motion of the sun; the apparent motion of the planets; the zodiac and precession; calculation of the times of the phases of the moon; conjunction of planets with one another; calculation of the heliacal rising of Sirius for Egypt and Babylon. As illustrations of the use of the tables and the accompanying instructions, the following examples may be given:—the magnitude at Messana at 7 a.m. of the Eclipse of Agathocles, 310 B.C., August 15; the date of the winter solstice of 1275 B.C. (it turns out that there was no winter solstice during that calendar year, it having occurred on the last day of the previous year); the day of the heliacal rising of Sirius at Memphis, 2477 B.C. (morning of July 16); the times of the occultation of Spica by the moon at Rome on January 11, 98 A.D. It will be seen that the work is comprehensive and authoritative. C. A. C.

Atlas de l'Hémisphère céleste boréal, Part II, Prague, 1929.

The first part of this Atlas was referred to in this JOURNAL for November 1928. The second part has now appeared. It contains nine charts covering the sky from declination 20°N. to the pole.

The draughtsman in this case was K. Novak but the style is the same and the production is of the same high character. The Czech Astronomical Society under whose auspices the Atlas is published is to be congratulated for its admirable work. C. A. C.

NOTES AND QUERIES

Communications are invited, especially from amateurs. The Editor will try to secure answers to queries.

ROTATION PERIOD OF NEPTUNE.

There has always been some doubt as to the length of time taken by Neptune to rotate on its axis; Maxwell Hall, in 1883, found its probable value to be 7.92 hours, and from his observations in 1915 he deduced 7.83 hours: a few years ago Opik and Liviander obtained 7.6 and 7.83 hours respectively. Last year J. H. Moore and D. H. Menzel, working with the 36-inch refractor of the Lick Observatory and employing the spectroscopic method, made a fresh attack upon the problem. They obtained seven spectrograms of the planet, and, by comparing the displacement of the spectral lines on the eastern and wesern limbs, they found that the linear speed of a point on the equator is about 2.76 kilometres a second, from which it follows that the length of the Neptunian day is about 15.8 hours—a result almost exactly double that previously obtained. The earlier workers had deduced the time of rotation from observations of the periodic variation in the brightness of the planet, but it is clear that if opposite hemispheres happened to resemble each other, the light would vary in half the period of rotation. It may be added that there are certain dynamical considerations which support the value obtained by Moore and Menzel, and it is likely that 15.8 hours will be accepted in future as the correct period of rotation of Neptune on its axis.—(From Astronomical Notes of the New Zealand Astronomical Society, by E. G. Hogg.)

DEATH OF W. R. WARNER.

Astronomers have learned with regret of the death of Worcester Reed Warner, founder, with Mr. Ambrose Swasey, of the firm of Warner and Swasey, of Cleveland, famous in the scientific world

for the construction of the mountings of some of the greatest telescopes in the world—although the production of telescopes was only a small fraction of their business, which was the making of machine tools.

During last Christmas week the present writer had the pleasure of visiting Mr. Warner at his splendid home at Tarrytown, N.Y., and though he and his wife were just recovering from an attack of influenza, he was very active and it seemed that he would have years in which to carry out his projects. With Mrs. Warner he sailed on May 8 to spend the summer in Europe, but he died at Eisenach, Germany, on June 25, in his eighty-fourth year. It is hoped to have a fuller account of his life in a later number of the JOURNAL.

WITHDRAWAL OF SIR FREDERIC STUPART

Readers will observe a change in the cover of this issue. Sir Frederic Stupart, having retired from the Directorship of the Meteorological Service, has withdrawn also from being Associate Editor; and his successor, Mr. John Patterson, has kindly taken his place on the JOURNAL. Mr. Patterson was born in Oxford County, Ontario. He obtained the B.A. degree from the University of Toronto in 1900, having graduated in the Faculty of Applied Science the year before. He was awarded the 1851 Exhibition Scholarship and went to Cambridge, England, where he worked for 2½ years. In December 1902, he was appointed Professor of Physics in Allahabad University, and two years later became Meteorologist to the Government of India. He occupied this position until 1910, when he became Physicist to the Canadian Meteorological Service, becoming Assistant Director in 1924. A number of contributions by Mr. Patterson have appeared in the JOURNAL, and we hope to have many more.

C. A. C.

MEETINGS OF THE SOCIETY

AT TORONTO

April 23—The regular meeting was held in the large lecture hall of the Physics Building at 8 p.m., Mr. J. R. Collins in the chair.

The following were elected:—

H. Clarence Kinnee, B.A., 428 Willard Avenue, Toronto 9.

Oscar E. Monnig, 312 W, Leuda, Fort Worth, Texas.

Walter A. Friz, 620 Mitchell Avenue, Elmhurst, Illinois, U.S.

Charles Lane Poor, professor of Celestial Mechanics, Columbia University, New York City, addressed the meeting on "Gravitation and the Motions of the Planets". He described the two principles on which Newton based his work, viz., the law of gravitation and the law of cause and effect. From these two laws has come all modern knowledge of the subject. Both of these laws are under scrutiny. The lecturer examined in detail the foundation principles of gravitation. All bodies falling to the earth gain in speed each second 32 feet per second, and the amount depends on the squares of the distances between two bodies. The size of the earth, as known in Newton's time, gave him the amount per second by which the moon falls to the earth, viz., one-twentieth of an inch. From this he verified the law of gravitation. Prof. Poor explained the perturbations in the orbits of the planets and the discovery of the planet Neptune from this circumstance. The planet Mercury, which is within the influence of all the other planets, is subject to the rotation of its path or orbit. This rotation amounts to a seven per cent. disagreement with what it would be if there were no other planets, which is the perihelial excess motion of Mercury. He compared Newton's and Einstein's views of the law of gravitation, and attributed to the Zodiacal Light any retardation there may be in the motions of Mercury as a complete explanation of the perturbation.

Prof. Alfred Baker moved, and Prof. C. A. Chant seconded a cordial vote of thanks for the lecture.

E. J. A. Kennedy,
Secretary.

AT VICTORIA

April 30.—The meeting was at Victoria College at 8 p.m., the President in the Chair.

Two new members were elected:

Consul-General G. B. Michell, 1263 Balmoral Rd., Victoria, B.C.

Mrs. Sophie M. Smith, Salmon Arm, B.C.

The subject of discussion was the "Telescope", and several members took part in it. Mr. J. Duff spoke of the grinding and polishing of the lenses, the difficulties one meets in obtaining the correct curvature and the patience necessary in such work. Mr. W. E. Harper discussed the process of silvering a mirror; the cleaning, the preparing of the solutions and the re-silvering. Mr. F. Moore discussed the mounting of a telescope, illustrating by his own excellent work.

Dr. J. S. Plaskett sketched the history of the 72-inch telescope at the Dominion Astrophysical Observatory. The idea that Canada should possess such an instrument was conceived at the meeting of the Astronomical Union at Pasadena in 1910. Resolutions from the various societies were sent to the Government supporting the idea. A committee headed by Sir Edmund Osler interviewed Dr. Roche, then Minister of the Interior. Dr. Plaskett prepared specifications and Mr. Harper was sent out to choose a suitable place for the new observatory. After many trials he chose Victoria. The mounting of the instrument was made by Messrs. Warner and Swasey. The disc was cast in Belgium, but polished and ground by the Brashear works in Pittsburgh. It was installed in April 1918 and observations were made early in May of the same year. Slides showed the work of transporting and the setting up of the huge instrument.

Mr. J. A. Pearce, the chairman, expressed the appreciation of the audience to the various speakers. It was announced that an observation meeting would be held on May 16th, and one a month throughout the summer.

WALTER H. GAGE,
Secretary.

CORRECTION

In the article entitled "The Light of the Eclipsed Moon", by P. M. Millman in the May-June issue, the titles under Figures 1 and 4 (pages 204-205) were interchanged. The curve in Fig. 1 is for the dark red filter, that in Fig. 4 is for the blue filter.

The Royal Astronomical Society of Canada

OFFICERS FOR 1929

Honorary President—J. S. Plaskett, B.A., D.Sc., F.R.S., Victoria, B.C.
President—W. E. Harper, M.A., Victoria, B.C.
First Vice-President—R. K. Young, Ph.D., Toronto.
Second Vice-President—Mgr. C. P. Choquette, M.A., Lic.Scs., Montreal.
General Secretary—Lachlan Gilchrist, M.A., Ph.D., 198 College St., Toronto
General Treasurer—H. W. Barker, 198 College St., Toronto.
Recorder—E. J. A. Kennedy, Toronto.
Librarian—C. A. Chant, M.A., Ph.D., Toronto
Curator—Robert S. Duncan, Toronto
Council—Miss A. Vibert Douglas, Ph.D., Montreal; Ernest A. Hodgson, M.A., Ottawa; J. H. Horning, M.A., Toronto; R. E. DeLury, M.A., Ph.D., Ottawa; R. A. Gray, B.A., Toronto; Col. W. E. Lyman, Montreal; Rev. Dr. D. B. Marsh, Jarvis, Ont.; John Satterly, M.A., D.Sc., Toronto; L. A. H. Warren, M.A., Ph.D., Winnipeg; Past Presidents—John A. Paterson M.A., K.C.; Sir Frederic Stupart, F.R.S.C.; A. T. DeLury, M.A.; L. B. Stewart, D.T.S.; Allan F. Miller; J. R. Collins; W. E. W. Jackson, M.A.; R. M. Stewart, M.A.; A. F. Hunter, M.A.; and the Presiding Officer of each Centre as follows—C. C. Smith, B.A., D.L.S., Ottawa; Dr. A. H. MacCordick, Montreal; Mrs. E. L. Taylor, Winnipeg; J. A. Pearce, M.A., Victoria; H. R. Kingston, M.A., Ph.D., London, Ont.

TORONTO CENTRE

Board in charge of meetings: J. R. Collins (Chairman); Dr. J. B. Fraser; H. W. Barker; R. A. Gray, B.A.; A. R. Hassard, B.C.L.; F. T. Stanford; Dr. W. M. Wunder; E. J. A. Kennedy (Secretary); Miss E. M. Budd (Assist. Secretary); Miss Evelyn M. Watt (Treasurer).

OTTAWA CENTRE

President—C. C. Smith, B.A., D.L.S. *Vice-President*—J. S. Lane, B.A.
Secretary—Miss M. S. Burland, B.A., Dominion Observatory, Ottawa
Treasurer—A. W. Grant, B.A.
Council—Dr. T. L. Tanton; Dr. C. F. Henroteau; A. W. Forrest; and Past Presidents—R. M. Stewart, M.A.; R. E. DeLury, M.A., Ph.D.; R. J. McDiarmid, M.Sc., Ph.D.; C. R. Coutlee, C.E.; and H. M. Ami, D.Sc.

MONTREAL CENTRE

Honorary President—Mgr. C. P. Choquette
President—Dr. A. Howard MacCordick
First Vice-President—H. E. S. Asbury
Second Vice-President—Col. W. E. Lyman
Treasurer—Prof. A. J. Kelly
Secretary—Dr. A. V. Douglas, Physics Building, McGill University Montreal
Assistant Secretary—Miss V. Johnston
Council—A. S. Eve, D.Sc., F.R.S.; J. T. Armand; J. Lutrell; Geo. Sample; Miss J. Fleet; Dr. J. B. McConnell; P. A. Waterman; Justice E. E. Howard.

LONDON CENTRE

President—H. R. Kingston, M.A., Ph.D.
Vice-President—Mrs. W. F. Boughner.
Secretary-Treasurer—Dr. H. S. Wismer, 253 Queen's Ave.
Council—Rev. R. J. Bowen, F.R.G.S.; T. C. Benson; Dr. W. S. Wismer, Miss N. Morris; D. S. Ainslie, M.A., Ph.D.

WINNIPEG CENTRE

President—L. A. H. Warren, M.A., Ph.D.
Vice-President—N. J. MacLean, M.D., F.A.C.S.
Treasurer—Mr. J. H. Kolb
Secretary—Mrs. J. Norris, 569 Sherburn St., Winnipeg
Council—Messrs. C. E. Bastin; D. R. P Coats, A. W. Meggett; Mrs. J. C. Howey, Right Rev. T. W. Morton, Mrs. E. L. Taylor

VICTORIA CENTRE

Honorary President—Daniel Buchanan, M.A., Ph.D.
President—J. A. Pearce, M.A.
First Vice-President—C. S. Beals, M.A., Ph.D.
Second Vice-President—G. M. Shrum, M.A., Ph.D.
Secretary-Treasurer—Prof. W. Gage, Victoria College, Victoria, B.A.
Council—J. P. Hibben; J. Goodfellow; G. A. Bucklin; W. T. Bridge; P. H. Hughes; and Past Presidents—J. S. Plaskett, D.Sc.; F. N. Denison; W. S. Drewry, C.E.; J. E. Umbach, C.E.; W. E. Harper, M.A.; James Duff, M.A.; and P. H. Elliott, M.Sc.

THE ROYAL ASTRONOMICAL SOCIETY OF CANADA

The objects of the Society, incorporated in 1890, are:

(*a*) "To study Astronomy, Astrophysics and such cognate subjects as shall be approved of by the Society and as shall, in its opinion, tend to the better consideration and elucidation of Astronomical and Astrophysical problems; and to diffuse theoretical and practical knowledge with respect to such subjects.

(*b*) To publish from time to time the results of the work of the Society; and,

(*c*) To acquire and maintain a Library, and such apparatus and real and personal property as may be necessary and convenient for the carrying into effect of the objects of the Society."

For many years the Toronto organization existed alone, but now the Society is national in extent, having active Centres in Montreal, P.Q.; Ottawa, Ont.; Toronto, Ont.; London, Ont.; Winnipeg, Man.; and Victoria, B.C. Among its 800 members are a number of the leading astronomers and scientists of the world, many amateurs, and in addition, many laymen who are interested in the culture of the science.

Membership in the Society is open to anyone interested in Astronomy. The annual dues are $2.00; life membership $25.00 (no further dues). The annual fee includes subscription to the publications.

The Society publishes a monthly JOURNAL containing about 400 pages of interesting articles, and the yearly HANDBOOK of 72 pages containing valuable information for the amateur observer. Single copies of the JOURNAL or HANDBOOK are 25 cents.

The Library and the Offices of the Society are at 198 College St., Toronto, Ont. Applications for membership, or for further information should be addressed to:

General Secretary—Dr. Lachlan Gilchrist, 198 College St., Toronto, Ont.

Montreal Secretary—Dr. A. V. Douglas, Physics Building, McGill University, Montreal, P.Q.

Ottawa Secretary—Miss M. S. Burland, B.A., Dominion Observatory Ottawa, Ont.

Toronto Secretary—E. J. A. Kennedy, Esq., 198 College St., Toronto, Ont.

London Secretary—DR. H. S. WISMER, 253 Queen's Ave.

Winnipeg Secretary—Mrs. J. Norris, 569 Sherburn St., Winnipeg, Man.

Victoria Secretary—Mr. Walter Gage, Victoria College, Victoria, B.C.